CLAIMS

1. A method for detecting liver cancer cells in a sample, which utilizes as an index expression of dlk gene.

2. The method according to claim 1, comprising measuring dlk expressing on cell surfaces.

3. The method according to claim 2, which utilizes antigen-antibody reaction between dlk expressing on cell surfaces and an anti-dlk antibody or an antigen-binding fragment thereof.

4. The method according to claim 3, wherein said anti-dlk antibody is a monoclonal antibody.

5. The method according to claim 1, which is carried out by FACS or MACS.

6. The method according to claim 1, which is carried out by measuring mRNA of dlk gene.

7. The method according to claim 6, comprising amplifying said mRNA or a cDNA derived therefrom by a nucleic acid-amplification method.

8. The method according to claim 7, comprising RT-PCR.

9. The method according to any one of claims 1 to 8, wherein said liver cancer cells are hepatocellular carcinoma cells and/or cholangiocellular carcinoma cells.

10. The method according to any one of claims 1 to 9, wherein said liver cancer cells are human liver cancer cells.

11. The method according to claim 4, wherein said liver cancer cells are human liver cancer cells, and said monoclonal antibody is an anti-human dlk monoclonal antibody.

12. A method for detecting liver cancer, comprising measuring extracellular domain of dlk existing in blood or urine collected from body.

13. The method according to claim 12, which utilizes antigen-antibody reaction between the extracellular domain of dlk existing in said blood and an anti-dlk

antibody or an antigen-binding fragment thereof.

14. The method according to claim 13, wherein said anti-dlk antibody is a monoclonal antibody.

15. The method according to claim 14, wherein said blood or urine is human blood or human urine, and said monoclonal antibody is an anti-human dlk monoclonal antibody.

16. A diagnostic for liver cancer, comprising an antibody or an antigen-binding fragment thereof, which undergoes antigen-antibody reaction with extracellular domain of dlk.

17. The diagnostic according to claim 16, wherein said antibody is an anti-human dlk monoclonal antibody.

18. A nucleic acid for detecting liver cancer, which hybridizes with mRNA or cDNA of dlk gene, and which may be used as a primer or probe for measuring the mRNA or cDNA of dlk gene.

19. The nucleic acid according to claim 18, comprising a region with a size of not less than 15 bases, said region being complementary to a part of said mRNA or cDNA of dlk gene or having an identity of not less than 90% to said region.

20. The nucleic acid according to claim 19, comprising a region with a size of not less than 15 bases, said region being complementary to said part of said mRNA or cDNA of dlk gene.

21. Use of an antibody or an antigen-binding fragment thereof, which undergoes antigen-antibody reaction with extracellular domain of dlk for the production of a diagnostic for liver cancer.

22. The use according to claim 21, wherein said antibody is an anti-human dlk monoclonal antibody.

23. Use of a nucleic acid which hybridizes with mRNA or cDNA of dlk gene and which may be used as a primer or probe for measuring said mRNA or cDNA of dlk

gene, for the production of a diagnostic for liver cancer.

24. The use according to claim 23, wherein said nucleic acid comprises a region with a size of not less than 15 bases, said region being complementary to a part of said mRNA or cDNA of dlk gene or having an identity of not less than 90% to said region.

25. The nucleic acid according to claim 24, comprising a region with a size of not less than 15 bases, said region being complementary to said part of said mRNA or cDNA of dlk gene.

26. A therapeutic drug for cancer, comprising as an effective ingredient an antibody which undergoes antigen-antibody reaction with Dlk expressing on surfaces of cancer cells, the antibody exerting anticancer action against said cancer cells.

27. The therapeutic drug according to claim 26, wherein said cancer cells are liver cancer cells.

28. The therapeutic drug according to claim 26 or 27, wherein said liver cancer cells are hepatocellular carcinoma cells and/or cholangiocellular carcinoma cells.

29. The therapeutic drug according to any one of claims 26 to 28, wherein said antibody is a monoclonal antibody.

30. The therapeutic drug according to any one of claims 26 to 29, wherein said cancer cells are human cells, and said antibody is an anti-human Dlk antibody.

31. The therapeutic drug according to any one of claims 26 to 30, which exerts anticancer action in the presence of complement.

32. A method for treating cancer, comprising administering to a cancer patient an effective amount of an antibody which undergoes antigen-antibody reaction with Dlk expressing on surfaces of cancer cells and which exerts anticancer action against said cancer cells.

33. The method according to claim 32, wherein said cancer cells are liver cancer cells.

34. The method according to claim 32 or 33, wherein said liver cancer cells are hepatocellular carcinoma cells and/or cholangiocellular carcinoma cells.

35. The method according to any one of claims 32 to 34, wherein said antibody is a monoclonal antibody.

36. The method according to any one of claims 32 to 35, wherein said cancer cells are human cells, and said antibody is an anti-human Dlk antibody.

37. The method according to any one of claims 32 to 36, wherein said antibody is one which exerts anticancer action in the presence of complement.

38. Use of an antibody which undergoes antigen-antibody reaction with Dlk expressing on surfaces of cancer cells and which exerts anticancer action against said cancer cells, for the production of a therapeutic drug for cancer.

39. The use according to claim 38, wherein said cancer cells are liver cancer cells.

40. The use according to claim 38 or 39, wherein said liver cancer cells are hepatocellular carcinoma cells and/or cholangiocellular carcinoma cells.

41. The use according to any one of claims 38 to 40, wherein said antibody is a monoclonal antibody.

42. The use according to any one of claims 38 to 41, wherein said cancer cells are human cells, and said antibody is an anti-human Dlk antibody.

43. The use according to any one of claims 38 to 42, wherein said antibody exerts anticancer action in the presence of complement.